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FLOOD-STORM IN THE SIERRA.

BEARS, wild sheep, and other denizens of the mountains are usually driven down out of the high Sierra about the beginning of winter, and are seldom allowed to return before late spring. But the extraordinary sunfulness of last winter, and my eagerness to obtain general views of the geology and topography of the Feather River basin, caused me to make a reconnoissance of its upper tributary valleys in the month of January. I had just completed this hasty survey and pushed my way down to comfortable winter quarters, when that fine storm broke upon the mountains which gave rise to the Marysville flood. I was then at Knoxville, a small village on the divide between the waters of the Yuba and Feather, some twenty miles back from the edge of the plains, and about 2,000 feet above the level of the sea. The cause of this notable flood was simply a sudden and copious fall of warm rain and warm wind upon the basins of the Yuba and Feather rivers at a time when these contained a consider-

able quantity of snow. The rain was of itself sufficient to produce a vigorous flood, while the snow which was so suddenly melted on the upper and middle regions of the basins may have been sufficiently abundant for the production of another flood equal in size to that of the rain. Now, these two distinct harvests of flood-waters were gathered simultaneously and poured down upon the plain in one magnificent avalanche. In the pursuit of clear conceptions concerning the formation of floods upon mountain rivers, we soon perceive that it is essential, not only that the water delivered by the tributaries be sufficient in quantity, but that it be delivered so rapidly that the trunk will not be able to discharge it without becoming choked and overflowed.

The basins of the Feather and Yuba are admirably adapted for the growth of floods. Their numerous tributary valleys radiate far and wide, comprehending large areas, and the tributaries are steeply inclined, while the trunks are

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What the Californians call the
glorious flood

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comparatively level. While the storm under consideration was in progress, the thermometer at Knoxville ranged between 44° and 50°, and when warm wind and warm rain fall simultaneously upon snow contained in basins like those of the Yuba and Feather, both the rain and that portion of the snow which the rain and wind melt are sponged up and held back until the combined mass becomes sludge, which at length, suddenly dissolving, descends all together to the trunk, where, heaping and swelling, flood over flood, they debouch upon the plain with a violence and suddenness that at first seem wholly unaccountable. The destructiveness of the **Marysville** portion of the flood was augmented somewhat by mining-gravel occupying the river channels, and by levees which gave way after having first restrained and accumulated a portion of the waters. These exaggerating conditions did not, however, greatly influence the general result, the main effect having been caused by the rare combination of flood-factors indicated above.

It is a pity that so few people were fortunate enough to fairly meet with and enjoy this noble storm in its own home among the mountains; for, dying as it did so little known, it will doubtless be remembered far more for the drifted bridges and houses that chanced to lie in its way than for its own beauty, or for the thousand thousand blessings it brought to the fields and gardens of nature. The impressions which storms excite in the minds of different individuals vary with the degree of development to which they have attained, and with the ever-changing accidents of health, business position, and so on. Nevertheless, there seemed to be much in the voices and aspects of the Marysville storm which was in every way proper to arouse universal admiration. I will, therefore, arouse a few of the more characteristic outlines.

On the morning of the flood (January 19th of this year) all the Knoxville landscapes were covered with running water, muddy torrents descended every gulch and ravine, and the sky was thick with rain. The pines had long slept in sunshine; they were now awake, and with one accord waved time to the beatings of the storm. The winds swept along the music curves of many a hill and dale, streaming through the pines, cascading over rocks, and blending all their tones and chords in one grand harmony. After fairly going out into and joining the storm, it was easy to see that only a small portion of the rain reached the ground in the form of drops; most of it seemed to have been dashed and beaten into a kind of coarse spray, like that into which small water-falls are broken when they strike glancingly on rough rock-shelves. Never have I beheld water falling from the sky in denser or more passionate streams. The heavy wind beat forward the spray in suffocating drifts, often compelling me to shelter in the copse or behind big pines. Go where I would, on ridges or in hollows, water still flashed and gurgled around my ankles, vividly recalling a wild storm morning in Yosemite, when a hundred water-falls from 1,000 to 3,000 feet in height came and sung together, filling all the valley with their sea-like roar.

After drifting compliantly an hour or two, I set out for the summit of a hill some 900 feet high, with a view to getting as far up into the storm as possible. This hill, which is the highest in the neighborhood, lies immediately to the south of Knoxville, and in order to reach it, I had to cross Dry Creek, a small tributary of the Yuba, that goes brawling along its base on the north-west. The creek was now a booming river as large as the Tuolumne, its current brown with mining-mud washed down from many a "claim," and mottled with sluice-

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boxes, fence-rails, and many a ponderous log that had long lain above its reach. A little distance below the village a slim foot-bridge stretches across from bank to bank, scarcely above the current. Here I was glad to linger, gazing and listening, while the storm was in its finest mood—the gray driving rain-stream above, the brown savage flood-river beneath. The storm-language of the river was hardly less enchanting than that of the forest wind; the sublime overboom of the main current, the swash and gurgle of eddies, the keen clash of firm wave-masses breaking against rocks, and the smooth hush of shallow currentlets feeling their way through the willows of the margin: and amid all this throng of sounds I could hear the smothered bumping and rumbling of bowlders down on the bottom, as they were shoving or rolling forward against one another. The glad strong creek rose high above its banks and wandered from its channel out over many a briery sand-flat and sedgy meadow. Alders and willows were standing waist-deep, bearing up against the current with nervous gestures, as if fearful of being carried away, while supple branches bending over the flood dipped lightly and rose again as if stroking the wild waters in play. Leaving the bridge and pushing on through the storm-swept forest, all the ground seemed in motion. Pine-tassels, flakes of bark, soil, leaves, and broken branches were being borne down; and many a rock-fragment weathered from exposed ledges was now receiving its first rounding and polishing at the hands of the strong enthusiastic storm-streams. On they rushed through every gulch and hollow, leaping, gliding, working with a will, and rejoicing like living creatures.

Nor were the phenomena confined to the ground. Every tree possessed a water system of its own; streams of every species were pouring down the grooves

of each trunk, organized as regularly as Amazons and Mississippi; their tributaries widely branched and distributed over the valleys and table-lands of the bark; their currents in flood-time choked with moss-pedicels and muddy with spores and pollen, spreading over shallows, deepening in gorges, dividing, con-flowing, and leaping from ledge to ledge. When patiently explored, these tree-rivers are found to possess much the same scenery as the rivers of the ground. Their valleys abound in fine miniature landscapes, moss-bogs enliven their banks like meadows, and thickets of fruited hypnæ rise here and there like forests. And though nearly vertical, these minute tree-rivers are not all fall. They flow in most places with smooth currents that mirror the banks and break into a bloom of foam only in a few special places.

Toward midday, cloud, wind, and rain seemed to have reached their highest pitch of grandeur. The storm was wholly developed; it was in full bloom, and formed, from my commanding outlook on the hill-top, one of the most glorious spectacles I ever beheld. As far as the eye could reach—above, beneath, around—the dusty wind-beaten rain filled the air like one vast water-fall. Detached cloud-masses swept imposingly up the valley as if endowed with independent motion—now rising high above the pine-tops, now descending into their midst, fondling their dark arrowy spires, and soothing every leaf and branch with infinite gentleness. Others, keeping near the ground, glided behind separate groves and brought them forward into relief with admirable distinctness; or passing in front, eclipsed whole groves in succession, pine after pine gradually melting in their gray fringes and emerging again seemingly clearer than before.

The topography of storms is in great measure controlled by the topography of the regions where they rise, or over

Even the furrows in the bark of the trees were covered with streams. Each tree was a river. The sky & the ground & the water were all in motion. The topography of storms is in great measure controlled by the topography of the regions where they rise, or over

which they pass. When, therefore, we attempt to study storms from the valleys or from the gaps and openings of the forest, we are confounded by a multitude of separate and apparently antagonistic impressions. The bottom of the main wind-stream is broken up into innumerable waves and currents that surge against the hill-sides like sea-waves against a shore, and these wind irregularities react in turn upon the nether surface of the main storm-cloud, eroding immense cavernous hollows and rugged cañons, and sweeping forward the resulting *detritus* in long curving trains like the moraines of glaciers. But in proportion as we ascend, these partial and confusing effects disappear, we escape above the region of dashing wind-waves and broken clouds, and the phenomena are beheld altogether united and harmonious.

The longer I gazed out into the storm, the more visible it became. The numerous trains and heaps of cloud-*detritus* gave it a kind of visible body, which explained many perplexing phenomena and published its motions in plain terms. This cloud-body was rounded out and rendered more visible and complete by the texture of the falling rain-mass. Rain-drops differ in shape and size; therefore, they fall at different velocities, and overtake and clash against one another, producing white mist and spray. They, of course, yield unequal compliance to the force of the wind, which gives rise to a still greater degree of interference and clashing; strong passionate gusts also sweep off clouds of spray from the groves like that torn from wave-tops in a gale. And all these factors of irregularity in the density, color, and general texture of the rain-mass, tend to make the visible body of the storm with all its motions more complete and telling. It is then seen definitely as a river, rushing over bank and brae, bending the pines like weeds, curving this

way and that, whirling in immense eddies in hollows and dells, while the main body pours grandly over all like an ocean current above the landscapes that lie hidden at the bottom of the sea.

I watched the gestures of the pines while the storm was at its height, and it was easy to see that they were not at all distressed. Several large sugar-pines stood near the thicket in which I was sheltered, bowing solemnly and tossing their giant arms as if interpreting the very words of the storm while accepting its wildest onsets with a passionate exhilaration. The lions were feeding. Those who have observed sunflowers eating light during any of the golden days of autumn know that none of their gestures express thankfulness. Their divine food is too heartily given, too heartily taken, to leave room for thanks. The sugar-pines were evidently accepting the benefactions of the storm in the same whole-souled manner; and when I looked down among the budding hazels, and still lower to the young violets and fern-tufts on the rocks, I noticed the same divine methods of giving and taking, and the same exquisite adaptations of what seems an outbreak of violent and uncontrollable force to the purposes of beautiful and delicate life.

Calms resembling deep sleep come upon whole landscapes just as they do upon individual pines, and storms awaken them in the same way. All through the dry midsummer of the lower portion of the range the withered hills and valleys seem to lie as empty and expressionless as dead shells on a shore. Even the loftiest alps may occasionally be found dull and uncommunicative, as if in some way they had lost countenance and shrunk to less than half their real stature. But when the lightnings crash and echo among these cañons, and the clouds come down and wreath and crown their jagged summits, every feature beams with expression, and they rise again and

hold themselves erect in all their imposing nobleness. *majestically*

Storms are fine speakers and tell all they know, but their voices of lightning, torrent, and rushing wind are infinitely less numerous than their nameless still small voices too low for human ears; and because we are poor listeners we fail to catch much that is *even* fairly within reach. Our best rains are heard mostly on roofs, and winds in chimneys; and when, by choice or compulsion, we are fairly stormed upon, the confusion made by cumbersome equipments, and our nervous haste, and the noise of hail or rain on hard-brimmed hats, prevent our hearing any other than the loudest expressions. Yet we may draw intense enjoyment from a knowledge of storm-sounds that we can not hear, and of storm-movements that we can not see. The sublime rush of planets around their suns is not heard any more than the oozing of rain-drops among the roots of plants.

How interesting would be the history of a single rain-drop followed back from the ground to its farthest fountains. It is hard to obtain clear general views of storms so extensive and seemingly so shapeless as the one under consideration, notwithstanding the aid derived from a thousand observers furnished with the best instruments. The smallest and most comprehensible species of Sierra storm is found growing in the middle region of the range, some specimens being so local and small that we can go round their bases and see them from all sides like a mountain. Like the rains of the greater portion of equatorial regions, they seem to obey a kind of rhythm, appearing day after day a little before noon, sometimes for weeks in succession, and forming one of the most imposing and characteristic features of the midday scenery. Their periods are well known and taken into account by Indians and mountaineers. It is not

long, geologically speaking, since the first rain-drop fell upon the present landscapes of the Sierra; for, however old the range may be, regarded as a whole, its features are young. They date back only to the glacial period. Yet in the few tens of thousands of years that have elapsed since these foot-hill landscapes were left bare by the melting ice-sheet, great superficial changes have taken place. The first post-glacial rains fell upon bare rocks and plantless moraines, but under nature's stormy cultivation these cold fields became fruitful. The ridged soils were spread out and mellowed, the seasons became warmer, and vegetation came gradually on—sedge and rush and waving grass, pine and fir, flower after flower—to make the lavish beauty that fills them to-day.

In the present storm, as in every other, there were tones and gestures inexpressibly gentle manifested in the midst of what is called violence and fury, and easily recognized by all who look and listen for them. The rain brought out all the colors of the woods with the most delightful freshness—the rich browns of bark, and burs, and fallen leaves, and dead ferns; the grays of rocks and lichens; the light purple of swelling buds, and the fine warm yellow greens of mosses and libocedrus. The air was steaming with fragrance, not rising and wafting past in separate masses, but equally diffused throughout all the wind. Pine woods are at all times fragrant, but most in spring when putting out their tassels, and in warm weather when their gums and balsams are softened by the sun. The wind was now chafing their needles, and the warm rain was steeping them. Monardella grows here in large beds, in sunny openings among the pines; and there is plenty of bog in the dells, and manzanita on the hill-sides; and the rosy fragrant-leaved *chamaebatia* carpets the ground almost everywhere. These with the gums and bal-

*They are as silent as rain drops falling
in the dark among the woods
just as we enjoy*

sams of the evergreens formed the chief local fragrance-fountains within reach of the wind. Sailors tell that the flowery woods of Colombia scent the breeze a hundred miles to sea. Our Sierra wind seemed so perfectly filled, it could hardly lose its wealth go where it would; for the ascending clouds of aroma when first set free were wind-rolled and washed and parted from all their heaviness, and they became pure, like light, and were diffused and fairly lodged in the body of the air, and worked with it in close accord as an essential part of it.

Toward the middle of the afternoon the main flood-cloud lifted along its western border, revealing a beautiful section of the Sacramento Valley lying some twenty or thirty miles away, brilliantly sunlit and glistening with rain-pools as if it were paved with burnished silver. Soon afterward a remarkably jagged bluff-like cloud with a sheer face appeared over the valley of the Yuba, dark colored and roughened with numerous furrows like some huge lava table. The blue Coast Range was seen stretching along the sky like a beveled wall, and the sombre and craggy Marysville Buttes rose imposingly out of the flooded plain like an island out of the sea. The rain began to abate, and the whole body of the storm was evidently withering and going to pieces.

I sauntered down through the dripping bushes, reveling in the universal vigor and freshness with which all the life about me was inspired. The woods were born again. How clean and unworn and immortal the world seemed to be!—the lofty cedars in full bloom, laden with golden pollen, and their washed plumes tipped with glowing rain-beads; the pines rocking gently and settling back into rest; light spangling on the broad mirror-leaves of the magnolia, and its tracery of yellow boughs relieved against dusky thickets of chestnut oak; liverworts, lycopodiums, ferns, all

exulting in their glorious revival, and every moss that had ever lived seemed to have come crowding back from the dead to clothe each trunk and stone in living green. Young violets, smilax, frutillaria, saxifrage, were pushing up through the steaming ground as if conscious of all their coming glory; and innumerable green and yellow buds, scarce visible before the storm, were smiling everywhere, making the whole ground throb and tingle with glad life. As for the birds and squirrels, not a wing or tail was to be seen. Squirrels are dainty fellows, and dislike wetness more than cats. They were, therefore, snug at home, rocking in their dry nests. The birds were down in the sheltered dells, out of the wind, some of the strongest pecking at acorns or madroña berries, but most sitting in low copses with breast-feathers puffed out and keeping each other company.

Arriving at the Knox House, the good people bestirred themselves, pitying my bedraggled condition as if I were some benumbed castaway snatched from the sea; while I, in turn, pitied them, and for pity proclaimed but half the exalted beauty and riches of the storm. A fire, dry clothing, and special food were provided, all of which attentions were, I suppose, sufficiently commonplace to many, but truly novel to me.

How terribly downright must seem the utterances of storms and earthquakes to those accustomed to the soft hypocrisies of society. Man's control is being steadily extended over the forces of nature, but it is well, at least for the present, that storms can still make themselves heard through our thickest walls. On the night of the Marysville flood the easy-going apathy of many persons was broken up, and some were made to think, and the stars were seen, and the earnest roar of a flood-torrent was heard for the first time—a fine lesson. True, some goods

for heavy dry clothing
+ smothered by the storm
gloriously
glory that
displayed about them

through there was some destruction on account of ignorance of Nature's ways. The

were destroyed, and a few rats and people were drowned, and some took cold on the house-tops and died, but the total loss was less than the gain.

The Knoxville I have spoken of—sometimes called Brownsville—is a desirable place of resort, not so much for the regular tourist, as for tired town-dwellers seeking health and rest. It lies some thirty miles to the east of Marysville, and is easily reached from this point by stage. The elevation above sea-level (2,000 feet) gives a delightful spring and autumn climate, diversified with storms of the most gentle and picturesque species. The woods are everywhere open to saunterers, for the trees are grouped in groves, and the hazel-bushes and dogwoods and most species of *chapparal* are kept together in tidy thickets, allowing room to pass between. In the larger of these openings flower-lovers will find plenty of mint, smilax, lilies, and mariposa tulips, and beds of gillias, violets, and hosackias, laid out in sunny parterres with their various colors and expressions in beautiful accord. The adjacent mountains, though not lofty, command an endless series of charming landscapes, and though the booming of strong Yosemite falls is not heard, many a fine-voiced streamlet may be found in the leafy dells, singing like a bird as it leaps lightly from linn to linn beneath the cool shadows of alders and maples and broad plummy ferns.

Willow Glen lies a few miles to the west of the village, and contains a thousand objects of interest, picturesque rocks, cascades, ferny nooks, acres of polypodium and aspidium, wild gardens charmingly laid out, slopes of blooming shrubs, iris-beds, vine-tangles, birds, groves, and so on, among which the appreciative tourist might revel for weeks.

The Fox Den is another noteworthy point lying a little to the north-west of the village, and about 500 feet above it. It is a picturesque rock-pile re-

sembling the ruins of some old feudal stronghold, where the red foxes of the neighborhood find shelter and sun themselves in the early morning, and where they watch and plan concerning the squirrels and quails that feed beneath the trees. In the spring-time the Den rocks are singularly rich in ferns, pellæa, polypodium, gymnogramma, and cheilanthes. In autumn they are brightened with lavish bunches of scarlet photinia berries, which show finely among their own warm yellow leaves and the gray-lichened rock-fronts, and, besides its own especial attractions, it commands noble views of the Sacramento Valley, and of the surrounding pictures of hill and dale.

The operations of all kinds of gold-mining may be witnessed in the neighborhood within short walks, or drives, and one of the guides attached to the hotel is wise in plants, more especially in ferns, and knows well the hollows where woodwardias are tallest, and the rocks most rosetted with pellæa and cheilanthes.

The house itself is about as fresh as the woods after rain, and full of home-like sunshine. One of its rooms is a fine marvel, well deserving special mention. It is built entirely of plain sugar-pine, and filled with apples of every tint and taste, from the floor to the ceiling, all nicely assorted, rising regularly above one another in tiers, and shining as if the sunniest side of every apple were facing you.

Knoxville, though not containing above a dozen houses, is said to be noted for ministers. This apple-room is at any rate a kind of church, free to all, where one may enjoy capital sermons on color, fragrance, and sweetness, with very direct enforcements of their moral and religious correlations.

The world needs the woods, and is beginning to come to them; but it is not yet ready for the fine banks and braes of

the lower Sierra, any more than for storms. Tourists make their way through the foot-hill landscapes as if blind to all their best beauty, and like children seek the emphasized mountains—the big alpine capitals whitened with glaciers and adorned with conspicuous spires. In like manner rivers are ascended hundreds of miles to see the water-falls at their heads, because they are as yet the only portions of river beauty plainly visible to all. Nevertheless the world moves onward, and “it is coming yet for a’ that” that the beauty of storms will be as visible as that of calms, and that lowlands will be loved more than alps, and lakes and level rivers more than water-falls.

THE MESSAGE.

O wave that fawneth at my feet!
 Have we not met as now we meet,
 While the still twilight steals along the sad Venetian sea?
 O did we not together chase
 The sea-bird from her resting-place—
 'Twas where the proud palms seemed to bear
 And drop their fruit for me!

Hast thou no syllable they gave
 That, lisped by sister wave to wave,
 Has sought for me on every shore and found me at the last?
 Ah, yes! for in thy deep unrest
 I hear a message half-expressed
 Of grief that can not find relief,
 Of joys forever past!

Return and tell them in that isle:
 Awhile, and yet a little while,
 And I will fly to them and say the words as yet unsaid—
 Precious the sands that we have trod,
 Thrice precious; and the sacred sod
 Is blest, above the youthful breast,
 The sweet dust of the dead.

THE LIDO, VENICE, September, 1874.